1. A parameter driven system for generating in near real time an optimal solution in response to employee transfer requests and leave requests for an entire enterprise, which comprises;

5   receiving means for providing input data including employee data, parameter values, configuration settings, said transfer requests, and said leave requests from a user; and

optimization processor means in electrical communication with said receiving means for generating a mixed integer programming model with decision variables and constraints from said

10   input data, and solving said mixed integer programming model in near real time to generate awards to employees including said transfer requests, said leave requests, new hire location assignments, and last half period new hire location assignments.

2. A system for optimized processing of transfer requests, leave requests, new hire location

15   assignments, and last half period new hire location assignments in managing employee staffing, which comprises:

a user interface for receiving parameter values and configuration settings from a user, and accessing said transfer requests, said leave requests, and employee data;

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a database in electrical communication with said user interface and having stored therein said transfer requests, said leave requests, and said employee data; and

an optimization processor in electrical communication with said user interface and receiving

25   said employee data, said parameter values, and said configuration settings from said user, and at least one of said transfer requests and said leave requests from said database for generating an optimized solution in near real time for all employees of an organization, said optimized solution having at least one of awards of said leave requests, awards of said transfer requests, said new hire location assignments, and said last half period new hire location assignments.

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3. The system of Claim 2, wherein said optimized solution is obtained by solving a mixed integer programming model having at least one objective function, and comprised of decision variables and constraints developed from said employee data, said leave requests, said transfer requests, said parameter values, and said configuration settings.

4. The system of Claim 3, wherein said constraints include the following seniority transfer processing constraints:

(i) $x_{k,j} - x_{k',j} \leq 0, \quad \forall k \in \Phi'_j, \quad \forall k' \in \Phi'_j, \quad \forall k' \gg k, \quad \forall j \in J;$

(ii) $y_{k,j} - x_{k',j} \leq 0, \quad \forall k \in \Phi_j \setminus \Phi'_j, \quad \forall k' \in \Phi'_j, \quad \forall k' \gg k, \quad \forall j \in J;$

(iii) $x_{k,j} - x_{k',j'} - y_{k',j} \leq 0, \quad \forall k \in \Phi'_j, \quad \forall k' \in \Phi_j \setminus \Phi'_j, \quad \forall k' \gg k, \quad \forall j \in J;$ and

(iv) $y_{k,j} - x_{k',j'} - y_{k',j} \leq 0, \quad \forall k \in \Phi_j \setminus \Phi'_j, \quad \forall k' \in \Phi_j \setminus \Phi'_j, \quad \forall k' \gg k, \quad \forall j \in J.$

5. The system of Claim 3, wherein said constraints include the following full period leave seniority processing constraints:

(i) $\displaystyle\sum_{t \in \{JS,FP\}}(w_{k,t} + u_{k,t} + v_{k,t} + z_{k,t}) - \sum_{t \in \{JS,FP\}} w_{k',t} \leq 0,$ where

$k \in A_j \cup B_j, \quad k' \in A_j \cup B'_j, \quad k' \gg k, \quad \forall j \in J;$ and

(ii) $\displaystyle\sum_{t \in \{JS,FP\}}(w_{k,t} + u_{k,t} + v_{k,t} + z_{k,t}) - \sum_{t \in T}(w_{k',t} + u_{k',t} + v_{k',t} + z_{k',t}) \leq 0,$ where

$k \in A_j \cup B_j, \quad k' \in B_j \setminus (A_j \cup B'_j), \quad k' \gg k, \quad \forall j \in J.$

6. The system of Claim 3 wherein said constraints include the following half period leave seniority processing constraints:

(i) $w_{k,FH} + u_{k,FH} + v_{k,FH} + z_{k,FH} - w_{k',FH} \leq 0,$ where

$k \in C_j, \quad k' \in C'_j, \quad k' \gg k, \quad \forall j \in J;$

(ii) $w_{k,FH} + u_{k,FH} + v_{k,FH} + z_{k,FH} - \displaystyle\sum_{t \in T}(w_{k',t} + u_{k',t} + v_{k',t} + z_{k',t}) \leq 0,$ where

$k \in C_j, \quad k' \in C_j \setminus C'_j, \quad k' \gg k, \quad \forall j \in J;$

(iii) $w_{k,LH} + u_{k,LH} + v_{k,LH} + z_{k,LH} - w_{k',LH} \leq 0,$ where

$k \in D_j, \quad k' \in D'_j, \quad k' \gg k, \quad \forall j \in J;$ and

(iv) $w_{k,LH} + u_{k,LH} + v_{k,LH} + z_{k,LH} - \displaystyle\sum_{t \in T}(w_{k',t} + u_{k',t} + v_{k',t} + z_{k',t}) \leq 0,$ where

$$k \in D_j, \quad k' \in D_j \setminus D_j', \quad k' \gg k, \quad \forall j \in J.$$

7. The system of Claim 3, wherein said constraints include the following transfer/full period leave seniority processing constraints:

(i) $\sum_{t \in \{JS, FP\}} (w_{k,t} + u_{k,t} + v_{k,t} + z_{k,t}) - \sum_{t \in \{JS, FP\}} w_{k',t} \leq 0$, where

$k \in A_j \cup B_j, \quad k' \in (A_j \cup B_j') \setminus \Theta_j \setminus \Phi_j, \quad k' \gg k, \quad \forall j \in J$;

(ii) $\sum_{t \in \{JS, FP\}} (w_{k,t} + u_{k,t} + v_{k,t} + z_{k,t}) - \sum_{t \in \{JS, FP\}} w_{k',t} - x_{k',i} - y_{k',i} \leq 0$, where

$k \in A_j \cup B_j, \quad k' \in (A_j \cup B_j') \cap \Theta_j, \quad k' \gg k, \quad \forall j \in J$;

(iii) $0 \leq \sum_{t \in \{JS, FP\}} (w_{k,t} + u_{k,t} + v_{k,t} + z_{k,t}) - 2 \sum_{t \in \{JS, FP\}} w_{k',t} + x_{k',j} \leq 1$, where

$k \in A_j \cup B_j, \quad k' \in (A_j \cup B_j') \cap \Phi_j', \quad k' \gg k, \quad \forall j \in J$;

(iv) $0 \leq \sum_{t \in \{JS, FP\}} (w_{k,t} + u_{k,t} + v_{k,t} + z_{k,t}) - 2 \sum_{t \in \{JS, FP\}} w_{k',t} + y_{k',j} \leq 1$, where

$k \in A_j \cup B_j, \quad k' \in (A_j \cup B_j') \cap (\Phi_j \setminus \Phi_j'), \quad k' \gg k, \quad \forall j \in J$;

(v) $\sum_{t \in \{JS, FP\}} (w_{k,t} + u_{k,t} + v_{k,t} + z_{k,t}) - \sum_{t \in T} (w_{k',t} + u_{k',t} + v_{k',t} + z_{k',t}) \leq 0$, where

$k \in A_j \cup B_j, \quad k' \in (B_j \setminus B_j' \setminus A_j) \setminus \Theta_j \setminus \Phi_j, \quad k' \gg k, \quad \forall j \in J$;

(vi) $\sum_{t \in \{JS, FP\}} (w_{k,t} + u_{k,t} + v_{k,t} + z_{k,t}) - \sum_{t \in T} (w_{k',t} + u_{k',t} + v_{k',t} + z_{k',t}) - x_{k',i} - y_{k',i} \leq 0$,

where

$k \in A_j \cup B_j, \quad k' \in (B_j \setminus B_j' \setminus A_j) \cap \Theta_j, \quad k' \gg k, \quad \forall j \in J$;

(vii) $0 \leq \sum_{t \in \{JS, FP\}} (w_{k,t} + u_{k,t} + v_{k,t} + z_{k,t}) - 2 \sum_{t \in T} (w_{k',t} + u_{k',t} + v_{k',t} + z_{k',t}) + x_{k',j} \leq 1$,

where

$k \in A_j \cup B_j, \quad k' \in (B_j \setminus B_j' \setminus A_j) \cap \Phi_j', \quad k' \gg k, \quad \forall j \in J$; and

(viii) $0 \leq \sum_{t \in \{JS, FP\}} (w_{k,t} + u_{k,t} + v_{k,t} + z_{k,t}) - 2 \sum_{t \in T} (w_{k',t} + u_{k',t} + v_{k',t} + z_{k',t}) + y_{k',j} \leq 1$,

where

$k \in A_j \cup B_j, \quad k' \in (B_j \setminus B_j' \setminus A_j) \cap (\Phi_j \setminus \Phi_j'), \quad k' \gg k, \quad \forall j \in J.$

8. The system of Claim 3, wherein said constraints include the following transfer/first half period leave seniority processing constraints:

(i) $w_{k,FH} + u_{k,FH} + v_{k,FH} + z_{k,FH} - w_{k',FH} \leq 0$, where

$$k \in C_j, \quad k' \in C_j' \setminus \Theta_j \setminus \Phi_j, \quad k' >> k, \quad \forall j \in J;$$

(ii) $w_{k,FH} + u_{k,FH} + v_{k,FH} + z_{k,FH} - w_{k',FH} - x_{k',i} - y_{k',i} \leq 0$, where

$$k \in C_j, \quad k' \in C_j' \cap \Theta_j, \quad k' >> k, \quad \forall j \in J;$$

(iii) $0 \leq w_{k,FH} + u_{k,FH} + v_{k,FH} + z_{k,FH} - 2w_{k',FH} + x_{k',j} \leq 1$, where

$$k \in C_j, \quad k' \in C_j' \cap \Phi_j, \quad k' >> k, \quad \forall j \in J;$$

(iv) $0 \leq w_{k,FH} + u_{k,FH} + v_{k,FH} + z_{k,FH} - 2w_{k',FH} + y_{k',j} \leq 1$, where

$$k \in C_j, \quad k' \in C_j' \cap (\Phi_j \setminus \Phi_j'), \quad k' >> k, \quad \forall j \in J;$$

(v) $w_{k,FH} + u_{k,FH} + v_{k,FH} + z_{k,FH} - \sum_{t \in T}(w_{k',t} + u_{k',t} + v_{k',t} + z_{k',t}) \leq 0$, where

$$k \in C_j, \quad k' \in (C_j \setminus C_j') \setminus \Theta_j \setminus \Phi_j, \quad k' >> k, \quad \forall j \in J;$$

(vi) $w_{k,FH} + u_{k,FH} + v_{k,FH} + z_{k,FH} - \sum_{t \in T}(w_{k',t} + u_{k',t} + v_{k',t} + z_{k',t}) - x_{k',i} - y_{k',i} \leq 0$, where

$$k \in C_j, \quad k' \in (C_j \setminus C_j') \cap \Theta_j, \quad k' >> k, \quad \forall j \in J;$$

(vii) $0 \leq w_{k,FH} + u_{k,FH} + v_{k,FH} + z_{k,FH} - 2\sum_{t \in T}(w_{k',t} + u_{k',t} + v_{k',t} + z_{k',t}) + x_{k',j} \leq 1$, where

$$k \in C_j, \quad k' \in (C_j \setminus C_j') \cap \Phi_j', \quad k' >> k, \quad \forall j \in J; \text{ and}$$

(viii) $0 \leq w_{k,FH} + u_{k,FH} + v_{k,FH} + z_{k,FH} - 2\sum_{t \in T}(w_{k',t} + u_{k',t} + v_{k',t} + z_{k',t}) + y_{k',j} \leq 1$, where

$$k \in C_j, \quad k' \in (C_j \setminus C_j') \cap (\Phi_j \setminus \Phi_j'), \quad k' >> k, \quad \forall j \in J.$$

9. The system of Claim 3, wherein said constraints include the following transfer/last half period leave seniority processing constraints:

(i) $w_{k,LH} + u_{k,LH} + v_{k,LH} + z_{k,LH} - w_{k',LH} \leq 0$, where

$$k \in D_j, \quad k' \in D_j' \setminus \Theta_j \setminus \Phi_j, \quad k' >> k, \quad \forall j \in J;$$

(ii) $w_{k,LH} + u_{k,LH} + v_{k,LH} + z_{k,LH} - w_{k',LH} - x_{k',i} - y_{k',i} \leq 0$, where

$$k \in D_j, \quad k' \in D_j' \cap \Theta_j, \quad k' >> k, \quad \forall j \in J;$$

(iii) $0 \le w_{k,LH} + u_{k,LH} + v_{k,LH} + z_{k,LH} - 2w_{k',LH} + x_{k',j} \le 1$, where

$$k \in D_j, \quad k' \in D'_j \cap \Phi'_j, \quad k' \gg k, \quad \forall j \in J;$$

(iv) $0 \le w_{k,LH} + u_{k,LH} + v_{k,LH} + z_{k,LH} - 2w_{k',LH} + y_{k',j} \le 1$, where

$$k \in D_j, \quad k' \in D'_j \cap (\Phi_j \setminus \Phi'_j), \quad k' \gg k, \quad \forall j \in J;$$

(v) $w_{k,LH} + u_{k,LH} + v_{k,LH} + z_{k,LH} - \sum_{t \in T} (w_{k',t} + u_{k',t} + v_{k',t} + z_{k',t}) \le 0$, where

$$k \in D_j, \quad k' \in (D_j \setminus D'_j) \setminus \Theta_j \setminus \Phi_j, \quad k' \gg k, \quad \forall j \in J;$$

(vi) $w_{k,LH} + u_{k,LH} + v_{k,LH} + z_{k,LH} - \sum_{t \in T} (w_{k',t} + u_{k',t} + v_{k',t} + z_{k',t}) - x_{k',j} - y_{k',j} \le 0$, where

$$k \in D_j, \quad k' \in (D_j \setminus D'_j) \cap \Theta_j, \quad k' \gg k, \quad \forall j \in J;$$

(vii) $0 \le w_{k,LH} + u_{k,LH} + v_{k,LH} + z_{k,LH} - 2\sum_{t \in T} (w_{k',t} + u_{k',t} + v_{k',t} + z_{k',t}) + x_{k',j} \le 1$, where

$$k \in D_j, \quad k' \in (D_j \setminus D'_j) \cap \Phi'_j, \quad k' \gg k, \quad \forall j \in J; \text{ and}$$

(viii) $0 \le w_{k,LH} + u_{k,LH} + v_{k,LH} + z_{k,LH} - 2\sum_{t \in T} (w_{k',t} + u_{k',t} + v_{k',t} + z_{k',t}) + y_{k',j} \le 1$, where

$$k \in D_j, \quad k' \in (D_j \setminus D'_j) \cap (\Phi_j \setminus \Phi'_j), \quad k' \gg k, \quad \forall j \in J.$$

10. The system of Claim 2, wherein said optimization processor is parameter driven and may be executed plural times with different parameter values and configuration settings to generate a variety of solutions from which a user can converge toward an optimal solution.

11. The system of Claim 2, wherein said optimization processor is operated with distinct sets of parameter values and configuration settings to determine which of said distinct sets meets staffing requirements in such a way that future staffing levels are not compromised.

12. A method for near real time optimized processing of all employee transfer requests, leave requests, new hire location assignments, and last half period new hire location assignments of an organization in managing employee staffing, which comprises the following steps:

receiving input data including said transfer requests, said leave requests, employee data, parameter values, and configuration settings from a user interface;

creating decision variables from said input data for use in a mixed integer programming model;

generating constraints from said input data such that coefficient values are determined for said decision variables, and constraint sense and right hand values are determined for each of said constraints;
and

solving said mixed integer programming model to generate awards to employees.

13. The method of Claim 12, wherein said awards include only said transfer requests, and the step of solving includes determining new hire location assignments.

14. The method of Claim 12, wherein said awards include only said leave requests.

15. The method of Claim 12, wherein said awards include both said transfer requests and said leave requests, and the step of solving includes determining said new hire location assignments and said last half period new hire location assignments.

16. The parameter driven system of Claim 1, further including means for modifying said parameter values to generate parameter value sets from which said optimization processor generates corresponding award sets from which an optimal set may be selected to avoid compromising future staffing requirements.

17. The parameter driven system of Claim 1, further including means for modifying said configuration settings to generate configuration setting sets from which said optimization processor generates corresponding award sets from which an optimal set may be selected to avoid compromising future staffing requirements.